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PHALANGIDS OF THE LANIATORID GENUS
SITALCINA (PHALANGODIDAE: OPILIONES)

By

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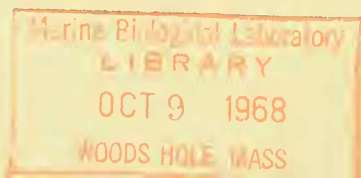
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INTRODUCTION

Phalangids of suborder Laniatores are represented by three families in western North America: Cosmetidae, Triaenonychidae, and Phalangodidae. The family Phalangodidae, distinguished by simple paired claws on the posterior tarsi, is much better represented than previously imagined. Two genera are known in the far west, *Phalangodes*, an exclusively cave dwelling group in the west, and *Sitalcina*, the prominent genus considered herein. *Zuma acuta* Goodnight and Goodnight, formerly placed in Phalangodidae, has been placed in Triaenonychidae (Briggs, 1967). Nineteen new species and subspecies are described in this paper in addition to the eleven known species in this genus and several new characters are presented.

HABITAT AND DISTRIBUTION

With the exception of *Sitalcina cockerelli* Goodnight and Goodnight all species of *Sitalcina* have been found solely in California. A large number of closely spaced but chiefly allopatric species are a dominant feature of *Sitalcina*. Their distribution is largely restricted to habitats offering high humidity, darkness, and warmth. Thus, low elevation forests and moist grasslands provide a favorable environment while only a few species have been taken in the desert, chaparral, or above 4000 feet. These restrictions limit the mobility of these phalangids and may be largely responsible for the speciation that occurs within adjacent river valleys and watersheds. The greatest known concentrations of species occur in the Sierra Nevadan foothills east of Fresno and in the San Francisco Bay Area.





MAP 1. Distribution of the genus *Sitalcina* in California. The shaded areas indicate serpentine.

Three microenvironments were observed for *Sitalcina*: (a) leaf, bark, and root debris, (b) undersurface of logs or rotting boards and rarely on the ground beneath the wood, (c) undersurface of rocks and much less commonly on the ground beneath rocks. Specimens were never observed exposed to daylight. The rocks or wood inhabited by *Sitalcina* usually had not been disturbed for a prolonged period and rested on moist but not saturated soil. Several of the group, characterized by a reduced tarsal segmentation and ocular degeneration, resided exclusively under rocks. Such rock-inhabiting populations were only found in topography characterized by an undisturbed rock-strewn surface not subject to flooding. Serpentine is a common float producing rock in California and seemed to be highly, if not exclusively, favorably regarded by many species, possibly because of its moisture holding properties. *Sitalcina macula*, new species, *S. polina*, new species, *S. morroensis*, new species, and *S. tiburona* Briggs and Hom were only found under serpentine. Granite is another float producer that provided the exclusive habitat for several Sierran species.

Only the forest dwelling species were collected during the dry season. The drying of the ground beneath rock-dwelling populations seemed to result in their disappearance until the first major rain.

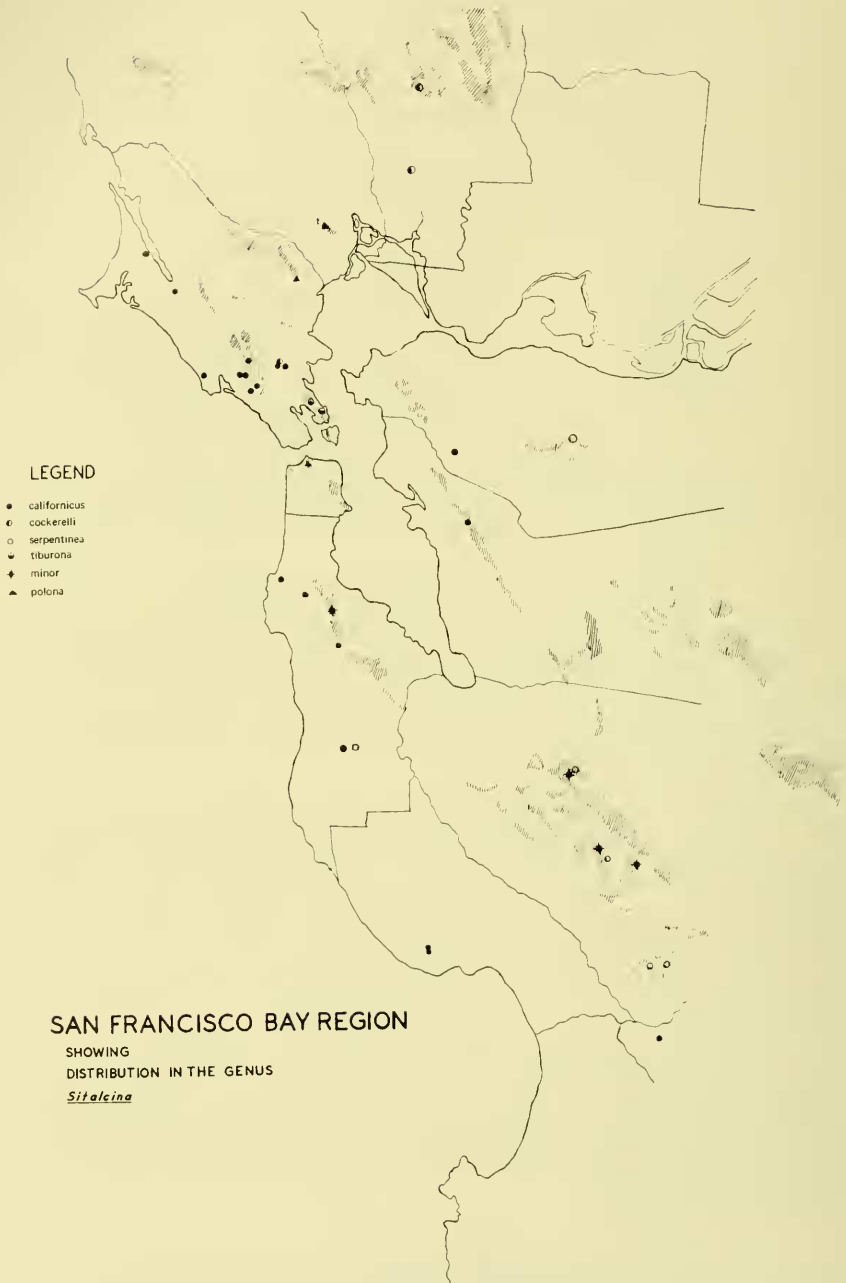
COLLECTING AND PRESERVING TECHNIQUES

Specimens are easily detected on the underside of rocks or wood owing to their yellow, orange, or reddish-brown color and their motionless stance or slow movements. A moist brush readily transfers them to preservative. Sifting is effective for extracting specimens from leaf litter. The Berlese funnel adds little to what can be found by sifting.

A mild preservative consisting of acetic acid (8 percent), glycerine (5 percent), water (26 percent), and isopropyl alcohol (61 percent), has been found most successful for a number of reasons: (a) Genitalia can be protruded by applying pressure at the base of the operculum. Alcohol alone renders this simple procedure ineffective. (b) The orange color remains for a longer period. (c) The appendages remain soft and pliable for microscopic study and photography. Larger specimens, such as scorpions, will decay in this preservative, but phalangids remain in good condition. Slide mounted specimens give a better view of segments, setae and claws, and internal sclerotized parts. In spite of this, I have found that unmounted types are more desirable because slide mounting distorts the specimen and superimposes features that must be viewed laterally. Even the genitalia are better viewed intact and unmounted because of their 3-dimensional complexity.

MORPHOLOGY

Several unique characters appear among the species of *Sitalcina* which are of specific importance and morphological interest.



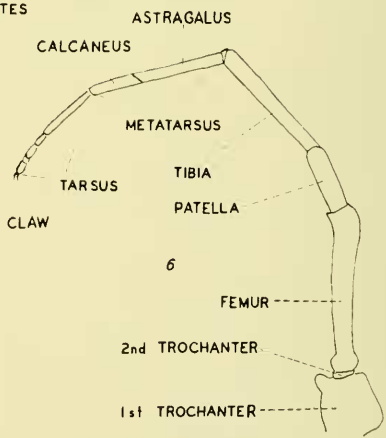
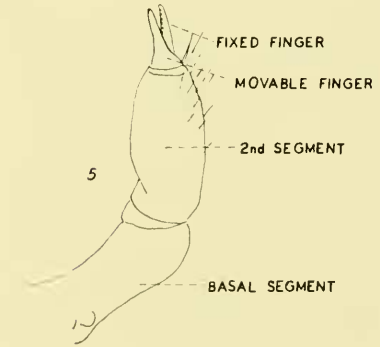
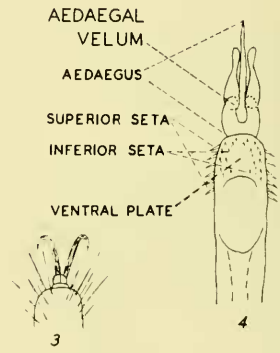
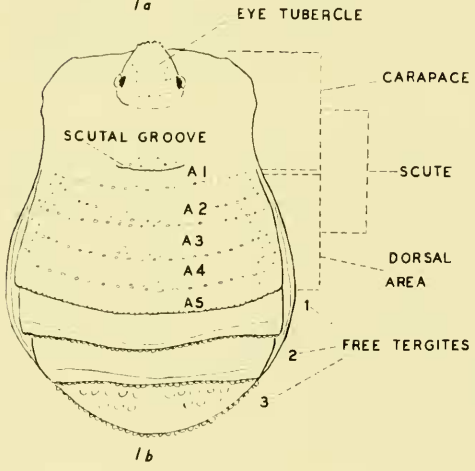
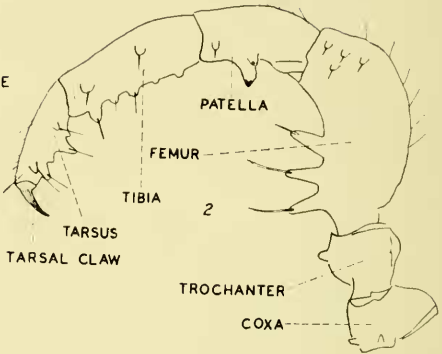
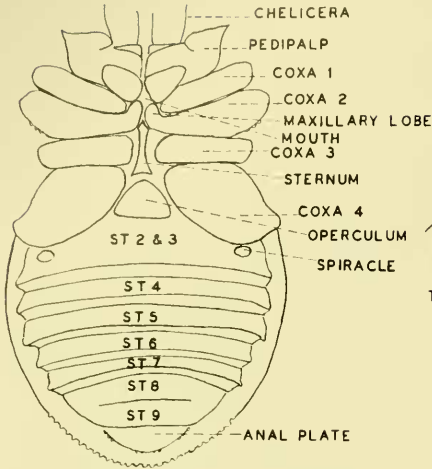
MAP 2. Distribution of the genus *Sitalcina* in the San Francisco Bay Region.

Many of the species are very small in relation to all known laniatorid phalangids. A peculiar trait among most of the smaller species is a marked reduction in their tarsal segment count. The tarsal segment formula reaches a minimum of 3-3-4-4 for *S. sequoia* Briggs and Hom. Variations in tarsal segment count of this magnitude might suggest the establishment of new genera as has been the practice by past workers. However, other characters, particularly genitalia, do not support such a division in this group. The tarsal formula within a species in *Sitalcina* is quite stable; no variations have been found thus far.

Most of the small species possess adaptations that would normally be found only on troglodytic phalangids. The best example of these are found in *S. minor* Briggs and Hom, *S. tiburona* Briggs and Hom, and *S. scopula*, new species, all found on the undersurface of rocks in open grassland. These species lack both the cornea and the retina of the eyes, have light coloration, and have relatively long legs. These characters closely parallel those of *S. cloughensis* Briggs and Hom which is the only example of a cave-dwelling species of *Sitalcina* that is probably troglodytic. Other small troglodyte-like species possess the cornea but lack a retina. Presence or absence of a retina is variable in *S. macula*, new species while presence or absence of a cornea is variable in *S. polina*, new species. One specimen of *S. polina* had a cornea on one side of the eye tubercle and none on the other side.

Two characters, one of which is apparently unique to *Sitalcina*, are found to be sexually dimorphic. One character is a spur on the trochanter of some of the larger species. This spur is most highly developed on *S. lobatus* Goodnight and Goodnight where it arches from a greatly lengthened trochanter in a complete loop. The trochanter, which equals the length of the femur, is almost penetrated by the tip of the spur. Females have completely normal trochanters. Other shapes of spurs are illustrated in figures 96 to 105. In some species it is difficult to tell if the spur is a dimorphic character because it is present to some extent on the females or it is reduced to a few tubercles. The function of this spur is undetermined. Similar dimorphic spurs were found in the Texas genus *Texella* by Goodnight (1967).

The other unanticipated dimorphic character is a spur that protrudes from the dorsal surface of the palpal tarsus on males of some of the smaller species. This spur is most highly developed on *S. digitus* Briggs and Hom on which it almost equals the length of the terminal claw of the palpus. Among species that possess this spur, there is a wide range of development. It barely exists on some, such as *S. kaweahensis* Briggs and Hom and *S. serpentinea* Briggs and Hom. If the spur is not degenerate it may aid the male in opening the genital operculum on the female. The trochanteral spur and the palpal spur have not been found to coexist on the same species. On at least one species, dimorphic enlargement of a prolateral spine on the palpal tarsus replaces the dimorphic palpal spur.



Most remaining external structures on *Sitalcina* are typical of *Phalangodids*. It should be mentioned that the second trochanter has been overlooked by most workers, but exists as a small segment rigidly joined to the femur.

Examination of the genitalia showed that the penis could be used to distinguish species and subspecies. The ventral plates of the penes were compared, but one might have utilized the far more complex aedaegal velum that can be unfolded from above these plates. Parts of the folded velum may be visible in the ventral view of the ventral plate and were so indicated in the illustrations.

SPECIATION

Two major groups and a number of smaller ones have been recognized in the genus *Sitalcina*. They are not presently believed to be of subgeneric importance because they have no characters which consistently belong to members of a particular group and not to members of other groups. This gradation of diverse traits suggest a rapid evolution toward several distinct genera. One major group, characterized by *S. californicus* (Banks) and *S. lobatus* Goodnight and Goodnight, has the most well developed of the trochanteral spurs that appear on the fourth legs of the males. This group has a maximum tarsal segment count and has well developed eyes. The second major group, characterized by *S. digitus* Briggs and Hom and *S. minor* Briggs and Hom, lacks the trochanteral spur but often has a dorsal spur on the palpal tarsus of males. This group usually has a reduced tarsal segment count and degenerate or totally absent eyes. Some species (*S. bifurcata*, new species, *S. scopula*, new species, and *S. palapraepudia*, new species) are distinguished from both groups by unusual ventral plates of the penis. The bifurcated ventral plate of *S. bifurcata* suggests that of genus *Phalangodes* and an undetermined Texas genus, but a membrane joins the two prongs near their base.

Among the characters found useful for species descriptions in Phalangodidae are the scute length and width. The length of the scute is more precisely determined than the length of the cephalothorax and does not depend on the condition of the specimen as much as the total body length does. The length of the second pair of legs best expresses the development of a tactile function in the legs of blind specimens while the lengths of the other legs add little taxonomic information. The lengths of the individual leg segments also are of questionable taxonomic value because they are difficult to measure consistently on unmounted specimens, vary somewhat within a species, and seldom are of an independently distinctive length. Forster (1954) presents data giving femur lengths

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FIGURES 1a-6. External morphology of *Sitalcina*. Figure 1a, dorsal view of body (*S. cockerelli*); figure 1b, ventral view of body (*S. cockerelli*); figure 2, typical pedipalp; figure 3, claws on hind tarsus; figure 4, ventral view of extended penis (*S. madera*); figure 5, typical chelicera; figure 6, typical 4th leg.

for *Nuncia obesa* which show that considerable variation can occur within Laniatorid subspecies. Any deviations from normal leg or leg-segment lengths found in this study are indicated.

Sitalcina Banks, 1911

Sitalces (part) BANKS, 1893, Trans. Amer. Ent. Soc., vol. 20, p. 15.

Metapachylus BANKS, 1909, Proc. Acad. Nat. Sci. Philad., vol. 61, p. 230.

Sitalcina BANKS, 1911, Pomona Jour. Ent., vol. 3, pp. 412-421. GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1188, p. 8. BRIGGS AND HOM, 1966, Pan-Pac. Ent., vol. 42, p. 263.

Paramitracevas (part) ROEWER, 1912, Arch. Naturg., vol. 77A, p. 155.

Pachylicus (part) ROEWER, 1923, Die Webernechte der Erde, p. 118.

First tarsus with three segments; distitarsus of first leg with two segments, of second with two or three; second, third and fourth tarsi with a maximum of five segments; maxillary lobe of second coxa with or without a small ventral projection; palpus with moderate ventral spination. Eye tubercle on anterior margin of cephalothorax, without spines, smooth or with tubercles. Dorsum with five distinct areas, boundaries parallel to one another; first area without a median line; all dorsal areas and free tergites without median spines. Abdomen uniformly rounded caudad. Ventral plate of penis undivided or, if divided, a membrane extends across the division.

TYPE SPECIES. *Sitalcina californicus* (Banks).

KEY TO SPECIES OF SITALCINA

- | | |
|---|--------------------------------------|
| 1. Tarsal formula 3-5-4-5, ventral plate of penis bifurcate | <i>S. bifurcata</i> , new species |
| Tarsal formula otherwise, if 3-5-4-5 then ventral plate entire | 2 |
| 2. Tarsal formula 3-5-5-5 | 3 |
| Not so | 16 |
| 3. Eyes absent | 4 |
| Eyes present | 5 |
| 4. Ventral plate of penis broad, with dense setae | <i>S. scopula</i> , new species |
| Ventral plate of penis normal, sparsely setose | <i>S. cloughensis</i> Briggs and Hom |
| 5. Eye tubercle low, nearly at level of scute; space between teeth on anterior margin
of scute at least equal to the width of individual teeth | <i>S. borregoensis</i> , new species |
| Eye tubercle elevated; teeth on anterior margin of scute in closely spaced groups if
more than a single pair is present | 6 |
| 6. Male with spur on palpal tarsus, trochanteral spur absent | 7 |
| Not so | 9 |
| 7. Prominent superior setae on tip of ventral plate of penis | <i>S. topanga</i> , new species |
| Tip of ventral plate without setae | 8 |
| 8. Ventral plate of penis notched, resembles an arrowhead | <i>S. digitus</i> Briggs and Hom |
| Not so, ventral plate with a distal extension | <i>S. mariposa</i> , new species |
| 9. Male with spur on 2nd trochanter of 4th legs, no spur on 1st trochanter | <i>S. madera</i> , new species |
| 2nd trochanter without spur, 1st trochanter with tubercles or spur | 10 |
| 10. 1st trochanter on 4th legs with several tubercles or rounded lobes | 11 |
| 1st trochanter with a prominent spur | 12 |

11. Ventral plate of penis with inferior setae, eye tubercle recessed from anterior margin of cephalothorax *S. cockerelli* Goodnight and Goodnight
 Ventral plate without inferior setae, eye tubercle extends over anterior margin of cephalothorax *S. granita*, new species
12. 1st trochanter on 4th legs with a straight, rod-shaped spur, eye tubercle a pointed cone *S. californicus* (Banks) 13
 1st trochanter with a curved, hook-shaped spur 13
13. 1st trochanter on 4th legs greatly lengthened, spur forms a complete loop
S. lobatus Goodnight and Goodnight 14
 Not so 14
14. Body robust, reddish-orange; broad tubercle on 2nd trochanter of 4th legs
S. sura, new species
 Body yellow, no swelling on 2nd trochanter 15
15. Ventral plate uniformly rounded distally *S. flava*, new species
 Ventral plate of penis with angular apex in an arrowhead shape
S. flava chalona, new subspecies
16. Tarsal formula 3-5-4-5 *S. kaweahensis* Briggs and Hom
 Not so 17
17. Tarsal formula 3-4-4-5 18
 Not so 22
18. Ventral plate of penis sclerotized and broadly truncate *S. palapraeputia*, new species
 Ventral plate normal 19
19. Retina absent *S. serpentina* Briggs and Hom
 Retina present 20
20. Male without spur from center of dorsum of palpal tarsus *S. piedra*, new species
 Center of dorsum of palpal tarsus with prominent spur 21
21. Ventral plate of penis with setose apex *S. keenea*, new species
 Ventral plate with bare, bilobed apex *S. yosemitensis*, new species
22. Tarsal formula 3-3-4-4 *S. sequoia* Briggs and Hom
 Tarsal formula 3-4-4-4 23
23. Body mottled with dark markings *S. macula*, new species
 Not so 24
24. Retina present 25
 Retina absent 27
25. Male with anterior prolateral spine of palpal tarsus twice length of posterior prolateral spine *S. ensata*, new species
 Anterior prolateral spine about equal in length to posterior prolateral spine 26
26. Ventral plate of penis notched, resembles an arrowhead; palpal spur prominent
S. sierra sierra Briggs and Hom
 Not so *S. sierra breva*, new species
27. Eye tubercle about $\frac{1}{3}$ width of body, eye tubercle descends gradually posteriorly
S. tiburona Briggs and Hom
 Eye tubercle about $\frac{1}{5}$ width of body, descends rapidly posteriorly 28
28. Male with prominent spur on palpal tarsus, tip of ventral plate of penis with setae *S. morroensis*, new species
 Not so 29
29. Ventral plate of penis with extended tip, small spur on palpal tarsus
S. polina, new species
 Ventral plate rounded anteriorly, no palpal spur *S. minor* Briggs and Hom

All new types, including paratypes, are deposited in the collection of the California Academy of Sciences.

***Sitalcina californicus* (Banks).**

(Figures 7, 37, 67, and 96.)

Sitalces californicus BANKS, 1893, Trans. Amer. Ent. Soc., vol. 20, p. 151.

Sitalcina californicus BANKS, 1911, Pomona Jour. Ent., vol. 3, pp. 412-421. Goodnight and Goodnight, 1942, Amer. Mus. Novitates, no. 1188, pp. 8-9.

Paramitraceras californicus ROEWER, 1912, Arch. Naturg., vol. 68A, p. 155.

Pachylicus californicus ROEWER, 1923, Die Weberknechte der Erde, p. 118.

MALE. Scute length, 1.22 mm. Scute width, 1.20 mm. Total body length, 1.70 mm. Width of eye tubercle, 0.28 mm. Length of eye tubercle, 0.34 mm. Length of 2nd leg, 3.12 mm.

Antero-lateral margin of scute with 2 to 3 pointed tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle a prominent pointed cone; surface granulate. Eyes present. Anterior margin of operculum not uniformly rounded. Maxillary processes on 2nd coxa small.

Tarsal formula 3-5-5-5. Trochanteral spur on 4th legs elongated into a thick rod, directed posteriorly, with a lobe on the ventral edge. Dorsal spur on palpal tarsus absent.

Ventral plate of penis with marginal setae on each side and a bare, scupe-shaped tip. Penis stalk narrow.

Color variable, from light orange to a dark reddish brown. Abdomen occasionally darkened by internal material.

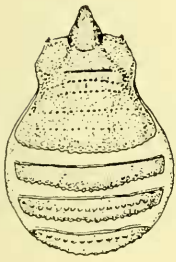
FEMALE. Similar to male but with anterior margin of operculum rounded and without trochanteral spurs. Ovipositor with a terminal ring of 12 spines in four groups of 3.

TYPE LOCALITY. Southern California.

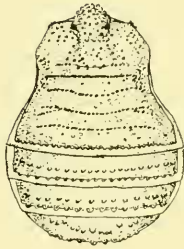
NEW RECORDS. CALIFORNIA. ALAMEDA COUNTY: 0.6 mile east MacArthur Blvd. along Chabot Road, 4 December 1966, V. Lee. CONTRA COSTA COUNTY: Canyon and Pine Hurst Roads; 2 miles west of Moraga, 19 August 1965, T. Briggs and V. Lee. MARIN COUNTY: 1 mile southeast Inverness, 12 March 1966, C. W. O'Brien; north end of paved road on Bolinas Ridge, 5 December 1965, 13 December 1965, 1 January 1966, V. Lee, K. Hom, and T. Briggs; 1.8 miles southwest Alpine Dam, 27 January 1966, K. Hom; 3 miles northeast Alpine Dam, 27 January 1966, P. Chin; Phoenix Lake, 14 May 1966, V. Lee; Lake Lagunitas, 19 July 1966, 5 February 1966, T. Briggs and K. Hom;

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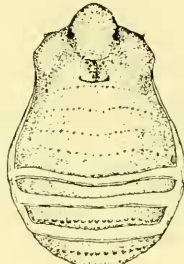
FIGURES 7-22. Dorsal aspect of species of *Sitalcina*. Figure 7, *S. californicus*; figure 8, *S. lobatus*; figure 9, *S. granita*; figure 10, *S. flava flava*; figure 11, *S. flava chalona*; figure 12, *S. sura*; figure 13, *S. madera*; figure 14, *S. cockerelli*; figure 15, *S. digitus*; figure 16, *S. sierra sierra*; figure 17, *S. sierra breva*; figure 18, *S. ensata*; figure 19, *S. kaweahensis*; figure 20, *S. cloughensis*; figure 21, *S. macula*; figure 22, *S. piedra*.



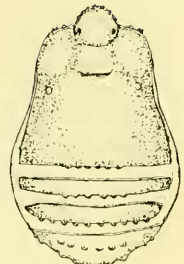
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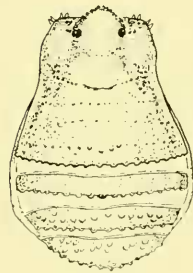
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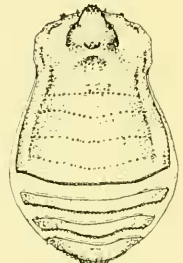
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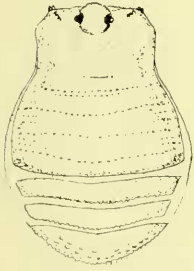
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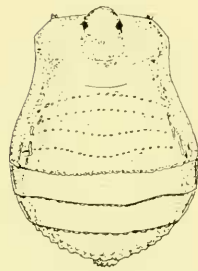
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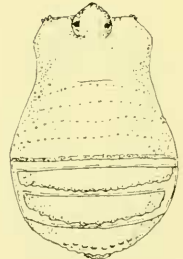
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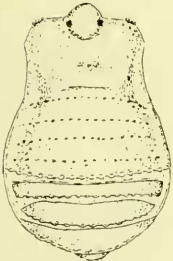
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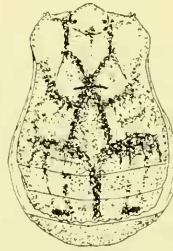
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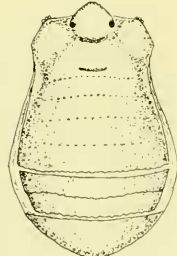
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22

2 miles northwest Bolinas, 22 March 1966, C. W. O'Brien; Bishop pine forest on Pt. Reyes, 6 February 1966, K. Hom; 1.8 miles east Stinson Beach along Panoramic Highway, 3 July 1966, T. Briggs, A. Jung, and K. Hom; 0.3 miles north Muir Woods, 27 August 1965, V. Lee, T. Briggs, D. Owyang, and K. Hom. MENDOCINO COUNTY: 1.5 miles southeast Little River, 3 August 1966, T. Briggs, V. Lee, and K. Hom; near east entrance W. H. Standley State Park, 4 July 1966, T. Briggs, V. Lee, and K. Hom. SAN BENITO COUNTY: 3 miles northwest San Juan Bautista, 28 February 1967, V. Lee. SAN LUIS OBISPO COUNTY: 3 miles due southwest Atascadero, 25 March 1967, T. Briggs and V. Lee; 1.1 miles west San Luis Obispo along Perfumo Road, 26 February 1967, V. Lee; 1.9 miles northwest San Luis Obispo along Stenner Road, 26 February 1967, V. Lee and T. Briggs. SAN MATEO COUNTY: Pilarcitos Lake, 27 February 1966, 17 February 1966, C. W. O'Brien; Linda Mar, 17 February 1967, T. Briggs and V. Lee; 7 miles southwest Crystal Springs Dam, 19 February 1966, T. Briggs and V. Lee. SANTA CRUZ COUNTY: Stump Hole Cave, near University of California campus, 17 November 1966, T. Briggs; Empire Cave, near University of California campus, 25 November 1966, K. Hom; Cave Gulch at University of California campus, 17 November 1966, 19 March 1966, K. Hom and T. Briggs; Bat Cave, near University of California campus, 11 June 1966. SONOMA COUNTY: 13.4 miles southeast Stewarts Point, 3 July 1966, V. Lee; Jenner, 12 March 1967, T. Briggs and K. Hom; 0.3 miles west Plantation, 12 February 1966, K. Hom, T. Briggs, D. Owyang, and A. Jung; 4.1 miles southeast Ft. Ross, 3 July 1966, T. Briggs, V. Lee, A. Jung, and K. Hom; 1 mile north Camp Meeker, 12 March 1967, T. Briggs; 5.8 miles northeast junction of Pleasant and Chalk Hill roads, 8 miles north of Santa Rosa, 21 April 1966, K. Hom, T. Briggs, and V. Lee.

Sitalcina lobatus Goodnight and Goodnight.

(Figures 8, 38, 68, and 97.)

Sitalcina lobatus GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1188, p. 9.

MALE. Scute length, 1.12 mm. Scute width, 1.18 mm. Total body length, 1.88 mm. Width of eye tubercle, 0.28 mm. Length of eye tubercle, 0.24 mm. 2nd leg length, 2.91 mm.

Anterior margin of scute with 4 tubercles on each side. Posterior margin of tergites with prominent lobe. Eye tubercle a rounded, tuberculate mound. Eyes present. Maxillary processes on 2nd coxa reduced.

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FIGURES 23–36. Dorsal aspect of species of *Sitalcina*. Figure 23, *S. keeneae*; figure 24, *S. topanga*; figure 25, *S. morroensis*; figure 26, *S. serpentinae*; figure 27, *S. minor*; figure 28, *S. tiburona*; figure 29, *S. sequoia*; figure 30, *S. scopula*; figure 31, *S. bifurcata*; figure 32, *S. palapraeputia*; figure 33, *S. borregoensis*; figure 34, *S. polina*; figure 35, *S. mariposa*; figure 36, *S. yosemitensis*.

Tarsal formula 3-5-5-5. 1st trochanter on 4th legs elongated to equal or surpass length of femur. Trochanteral spur arched into a complete loop with tip embedded in trochanter. Dorsal spur on palpal tarsus absent.

Ventral plate of penis with a rounded, spoon-shaped distal process. Superior setae project from base of process and along anterior margins of ventral plate. Penis stalk narrow.

Color orange to reddish brown.

FEMALE. Similar to male but without trochanteral spur or elongated 4th trochanter. Ovipositor similar to that of type species.

TYPE LOCALITY. Oceanside, California.

NEW RECORDS. CALIFORNIA. LOS ANGELES COUNTY: 7 miles north Claremont along road to Mt. Baldy, 31 December 1966, K. Hom, T. Briggs, and A. Jung. RIVERSIDE COUNTY: Hurkey Creek Camp, San Bernardino National Forest, 3 April 1966, T. Briggs and K. Hom; 9.5 miles north San Jacinto along highway 79, 3 April 1966, V. Lee and K. Hom; 1 mile northwest Lake Elsinore in Slater Canyon, 21 December 1966, T. Briggs; 2 miles due northwest Perris, 24 March 1967, V. Lee. SAN DIEGO COUNTY: 5.9 miles north Lakeside, 28 December 1966, T. Briggs.

***Sitalcina granita* Briggs, new species.**

(Figures 9, 39, 69, and 98.)

MALE. Scute length, 1.47 mm. Scute width 1.41 mm. Total body length, 2.19 mm. Width of eye tubercle, 0.37 mm. Length of eye tubercle, 0.42 mm. Length of 2nd leg, 4.06 mm.

Anterior margin of scute with one tubercle on each side. Posterior margin of tergites lobate. Eye tubercle a large, rounded cone directed over anterior margin of scute. Eyes present. Operculum small.

Tarsal formula 3-5-5-5. Trochanteral spur on 4th legs reduced to two rounded lobes directed retrolaterally, posterior lobe being largest. Palpal tarsus slender, dorsal spur absent.

Ventral plate of penis uniformly elliptical, bordered by superior setae except at tip. Penis stalk narrow.

Color orange to reddish brown.

FEMALE. Measurements about 75 percent of male measurements. Trochanteral lobes absent. Ovipositor small, terminal spines of moderate length.

TYPES. Holotype male, allotype female, and 14 paratypes. Under granite in oak grassland, 7 miles east Fountain Springs, Tulare County, California, 14 March 1967, T. Briggs, V. Lee, A. Jung, and K. Hom. Numerous paratypes 6.3 miles east Fountain Springs, Tulare County, California, 19 March 1967, T. Briggs, K. Hom, A. Jung, and P. Lum. One paratype under granite, 1.4 miles east Granite Station, Kern County, California, 22 January 1967, K. Hom.

***Sitalcina flava* Briggs, new species.**

(Figures 10, 40, 70, and 99.)

MALE. Scute length, 1.06 mm. Scute width 1.12 mm. Total body length, 1.51 mm. Width of eye tubercle, 0.30 mm. Length of eye tubercle, 0.33 mm. 2nd leg length, 2.98 mm.

Anterior margin of scute with 3 tubercles on each side. Posterior margin of tergites with prominent lobes. Eye tubercle uniformly rounded, smooth. Eyes present. Maxillary processes on 2nd coxa broadly rounded. Operculum small, posterior and anterior margins about equal, lateral margins convex.

Tarsal formula 3-5-5-5. Trochanteral spur sharply curved posteriorly from venter of 4th coxa. Dorsal spur on palpal tarsus absent.

Ventral plate of penis with numerous short setae on lateral margins; distal end uniformly rounded.

Color yellow-orange.

FEMALE. Similar to male but without trochanteral spur. Terminal ring of spines on ovipositor irregular.

TYPES. Holotype male, allotype female, and two paratypes. Under sandstone in dense Live Oak, 1 mile south Topanga, Los Angeles County, California, 24 March 1967, T. Briggs and K. Hom. Eight specimens under sandstone in dense live oak, 3.3 miles north Topanga Beach, Los Angeles County, 7 April 1966, T. Briggs, V. Lee, and K. Hom. One specimen in oak and sycamore litter, 4.7 miles north Topanga, Los Angeles County, California, 27 December 1966, T. Briggs.

***Sitalcina flava chalonga* Briggs, new subspecies.**

(Figures 11, 41, 71, and 100.)

MALE. Scute length, 1.15 mm. Scute width, 1.34 mm. Total body length, 1.95 mm. Length of eye tubercle, 0.29 mm. Width of eye tubercle, 0.26 mm. Length of 2nd leg, 3.70 mm.

Anterior margin of scute with 4-5 tubercles on each side. Posterior margin of tergites with prominent lobes. Eye tubercle a rounded cone. Eyes present. Maxillary processes on 2nd coxa blunt lobes. Operculum small, posterior and anterior margins about equal, lateral margins convex.

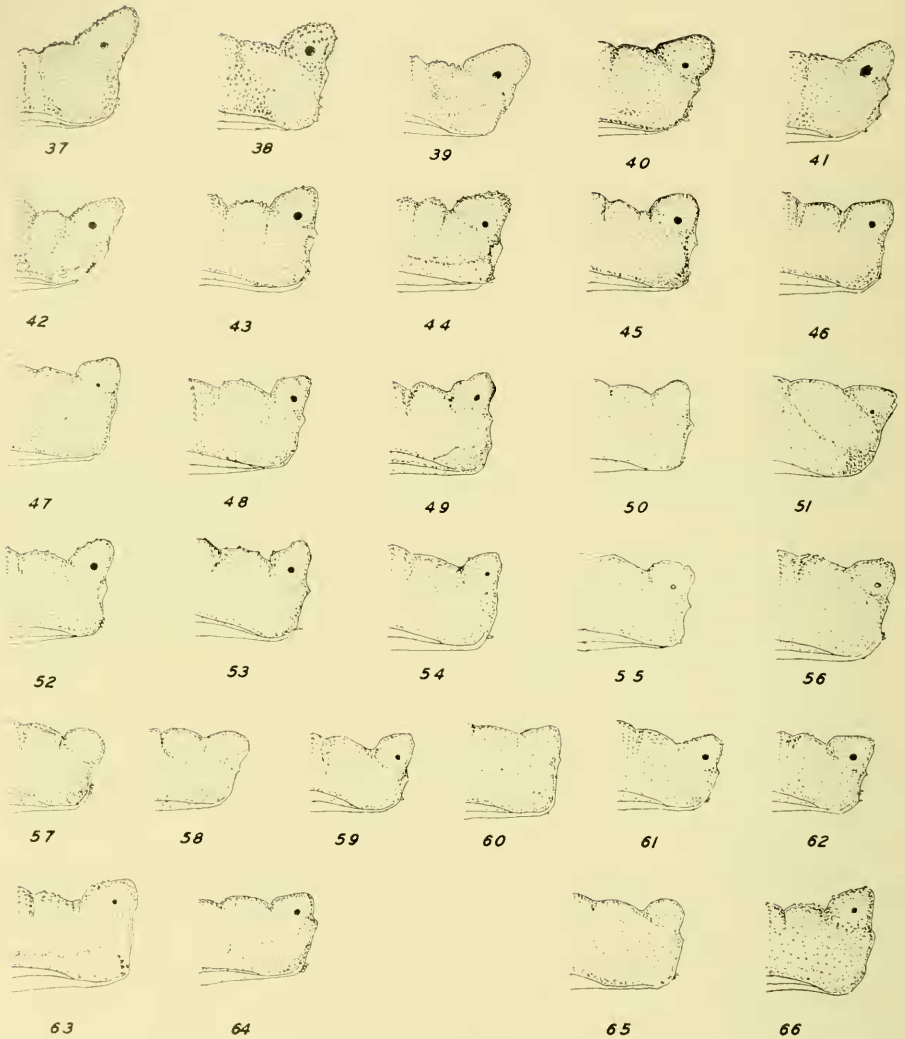
Tarsal formula 3-5-5-5. Trochanteral spur sharply curved posteriorly from venter of 4th coxa. Dorsal spur on palpal tarsus absent.

Ventral plate of penis with numerous short setae on lateral margins; distal end without setae, shaped like an arrowhead.

Color yellow-orange.

FEMALE. Similar to male but without trochanteral spur.

TYPES. Holotype male, allotype female, and four paratypes. Under rhyolite in dense chapparal on north facing slopes of Bear Gulch Canyon, Pinnacles National Monument, San Benito, California, 26 November 1966, T. Briggs. Other records from under rocks on moist slopes of Old Pinnacles Camp Ground,



FIGURES 37-66. Lateral view of eye tubercle of species of *Sitelcina*. Figure 37, *S. californicus*; figure 38, *S. lobatus*; figure 39, *S. granita*; figure 40, *S. flava flava*; figure 41, *S. flava chalona*; figure 42, *S. sura*; figure 43, *S. madera*; figure 44, *S. cockerelli*; figure 45, *S. digitus*; figure 46, *S. sierra sierra*; figure 47, *S. sierra breva*; figure 48, *S. ensata*; figure 49, *S. kaweahensis*; figure 50, *S. cloughensis*; figure 51, *S. macula*; figure 52, *S. piedra*; figure 53, *S. keenea*; figure 54, *S. topanga*; figure 55, *S. morroensis*; figure 56, *S. serpentina*; figure 57, *S. minor*; figure 58, *S. tiburona*; figure 59, *S. sequoia*; figure 60, *S. scopula*; figure 61, *S. bifurcata*; figure 62, *S. palapraeputia*; figure 63, *S. mariposa*; figure 64, *S. borregoensis*; figure 65, *S. polina*; figure 66, *S. yosemitensis*.

19 March 1967, J. Tom, and 0.5 miles east Chalone Camp Ground, 20 March 1967, J. Tom.

Sitalcina sura Briggs, new species.

(Figures 12, 42, 72, and 101.)

MALE. Scute length, 1.43 mm. Scute width, 1.64 mm. Total body length, 2.41 mm. Length of eye tubercle, 0.37 mm. Width of eye tubercle, 0.41 mm. 2nd leg length, 4.20 mm.

Anterior margin of scute with 4 prominent tubercles on each side. Posterior margins of tergites tuberculate. Eye tubercle large, spherical. Eyes large. Maxillary processes on 2nd coxa of normal size.

Tarsal formula 3-5-5-5. Trochanteral spur on 4th legs broad, curved sharply to the posterior. Swelling present on 2nd trochanter. Dorsal spur on palpal tarsus absent.

Ventral plate of penis broad, with numerous small setae on lateral margins. Distal margin without setae, slightly bilobed. Penis stalk narrow.

Color reddish brown.

FEMALE. About 90 percent size of male. Trochanteral spur absent. Ovipositor normal in structure.

TYPES. Holotype male, allotype female, and four paratypes. Under rocks in redwood forest at Big Sur, Monterey County, California, 20 March 1966, T. Briggs and K. Hom. Four paratypes under Monterey Pine logs on False Pt. Sur, Monterey County, California, 20 March 1966, K. Hom and T. Briggs. Numerous specimens from redwood groves in Bixby Canyon, Monterey County, California, 9 July 1967, T. Briggs.

Sitalcina madera Briggs, new species.

(Figures 4, 13, 43, 73, and 102.)

MALE. Scute length, 1.30 mm. Scute width, 1.28 mm. Total body length, 1.92 mm. Length of eye tubercle, 0.34 mm. Width of eye tubercle, 0.32 mm. Length of 2nd leg, 3.22 mm.

Anterior margin of scute with 3 prominent tubercles on each side. Posterior margins of tergites tuberculate. Eye tubercle a rounded cone. Eyes present. Maxillary processes on 2nd coxa small.

Tarsal formula 3-5-5-5. Trochanteral spur absent from 1st trochanter of 4th legs, but a short cylindrical spur exists prolaterally on 2nd trochanter. Dorsal spur on palpal tarsus absent.

Ventral plate of penis setose along entire distal margin. Setae short and dense.

Color orange.

FEMALE. Similar to male but with a smaller spur on 2nd trochanter of 4th legs. Operculum is small and withdrawn from contact with 4th coxa. Ovipositor is of normal structure.

TYPES. Holotype male, allotype female, and three paratypes. Under granite

in yellow pine and oak forest 5 miles south Coarsegold, Madera County, California, 16 April 1967, T. Briggs.

Sitalcina cockerelli Goodnight and Goodnight.

(Figures 14, 44, 74, and 103.)

Sitalcina cockerelli GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1188, p. 9.

MALE. Scute length, 2.35 mm. Scute width, 2.06 mm. Total body length, 3.20 mm. Width of eye tubercle, 0.70 mm. Length of eye tubercle, 0.59 mm. Length of 2nd leg, 3.30 mm.

Anterior margin of scute with 1-3 tubercles on each side, outermost pair largest. Posterior margin of tergites tuberculate. Eye tubercle a rounded mound slightly recessed from anterior margin of scute. Eyes present. Operculum somewhat setose. Maxillary processes on 2nd coxa prominent.

Tarsal formula 3-5-5-5. Trochanteral spur on 4th legs reduced to 2 to 4 large retrolateral tubercles. Dorsal spur on palpal tarsus absent.

Ventral plate of penis uniformly setose with inferior and superior setae, without a bare tip. Setae uniformly short. Penis stalk narrow.

Color orange.

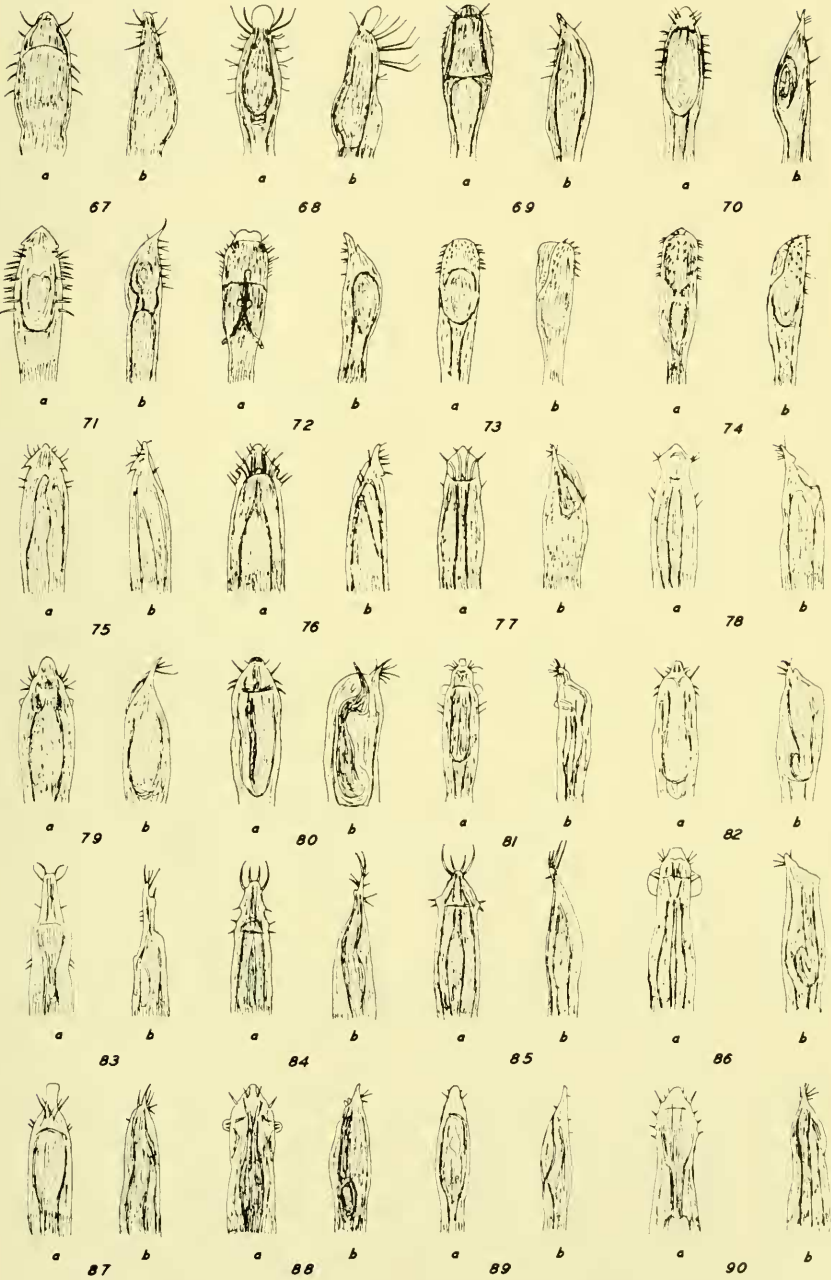
FEMALE. Similar to male but with reduced trochanteral tubercles. One inland female considerably smaller than male. Ovipositor with a terminal ring of 12 spines in 3's.

TYPE LOCALITY. Myer's Auto Camp, Humboldt County, California.

NEW RECORDS. CALIFORNIA. DEL NORTE COUNTY: Ft. Dick, 2 December 1966, C. W. O'Brien; 1.6 miles north Del Norte Coast Redwoods State Park, 18 June 1966, T. Briggs, V. Lee, A. Jung, and K. Hom; 0.3 miles southeast of east entrance Jedediah Smith Redwoods State Park, 25 June 1966, A. Jung and K. Hom; 2.1 miles northeast Crescent City, 25 June 1966, K. Hom. HUMBOLDT COUNTY: 2.9 miles south Garberville, 13 March 1966, K. Hom; Orick, 18 June 1966, K. Hom and V. Lee; 1.0 miles north Pepperwood, 28 January 1967, T. Briggs and V. Lee; Arcata Redwood Tree Farm, near Prairie Creek State Park, 18 June 1966, V. Lee. MARIN COUNTY: Lake Lagunitas picnic area, 19 July 1966, T. Briggs; 0.75 miles east Bon Tempe Lake Dam, 3 April 1966, K. Hom. MENDOCINO COUNTY: Cummings, 12 March 1966, K. Hom; near east entrance William H. Standley State Park, 4 July 1966, T. Briggs and K. Hom; Underwood Park, 13 March 1966, T. Briggs and K. Hom; 1.0 miles north Squaw

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FIGURES 67-90. Ventral view of penis of species of *Sitalcina*. Figure 67, *S. californicus*; figure 68, *S. lobatus*; figure 69, *S. granita*; figure 70, *S. flava flava*; figure 71, *S. flava chalonga*; figure 72, *S. sura*; figure 73, *S. madera*; figure 74, *S. cockerelli*; figure 75, *S. digitus*; figure 76, *S. sierra sierra*; figure 77, *S. sierra breva*; figure 78, *S. ensata*; figure 79, *S. kaweahensis*; figure 80, *S. cloughensis*; figure 81, *S. macula*; figure 82, *S. piedra*; figure 83, *S. keenca*; figure 84, *S. topanga*; figure 85, *S. morroensis*; figure 86, *S. serpentina*; figure 87, *S. minor*; figure 88, *S. polina*; figure 89, *S. tiburona*; figure 90, *S. sequoia*.



Rock, on Highway 101, 13 March 1966, T. Briggs; 2.3 miles south Piercy, 13 March 1966, 18 June 1966, V. Lee, K. Hom, and T. Briggs. NAPA COUNTY: 4.3 miles northwest Napa, on Redwood Road, 21 May 1966, T. Briggs and K. Hom; under serpentine in Digger Pine forest near Hennesy Dam, 12 March 1967, T. Briggs. SONOMA COUNTY: Redwood grove at bridge on Chalk Hill Road, 13.8 miles north Santa Rosa, 21 May 1966, K. Hom. OREGON. CURRY COUNTY: Boardman State Park, 18 June 1966, T. Briggs, A. Jung, V. Lee, and K. Hom; 3 miles east Pistol River, 18 June 1966, V. Lee and K. Hom; 1.5 miles southeast Nesika Beach, 29 January 1967, K. Hom and T. Briggs; 4.5 miles south Gold Beach, 29 January 1967, 19 June 1966, T. Briggs, V. Lee, A. Jung, and K. Hom.

***Sitalcina digitus* Briggs and Hom.**

(Figures 15, 45, 75, and 106.)

Sitalcina digitus BRIGGS AND HOM, 1967, Pan-Pac. Ent., vol. 43, pp. 51-52.

MALE. Scute length, 0.96 mm. Scute width, 0.94 mm. Total body length, 1.40 mm. Length of eye tubercle, 0.19 mm. Width of eye tubercle, 0.22 mm. Length of 2nd leg, 2.60 mm.

Anterior margin of scute with 2 prominent tubercles on each side. Posterior margin of tergites slightly tuberculate. Eye tubercle in the form of a blunt cone with tubercles on dosal surface. Eyes present. Maxillary lobes on 2nd coxa slightly directed ventrally. Operculum large, overlaps 4th coxa slightly.

Tarsal formula 3-5-5-5. Trochanteral spur absent. Dorsal surface of palpal tarsus with prominent spur about one-third to two-thirds length of terminal claw.

Ventral plate of penis in the shape of an arrowhead with deep lateral notches near apex.

Color orange.

FEMALE. Similar to male but without palpal spur.

TYPE LOCALITY. 2.2 miles south of Giant Forest, Sequoia National Park, Tulare County, California, K. Hom and T. Briggs.

***Sitalcina sierra sierra* Briggs and Hom.**

(Figures 16, 46, and 76.)

Sitalcina sierra Briggs and Hom, 1967, Pan-Pac. Ent., vol. 43, p. 49.

MALE. Scute length, 0.87 mm. Scute width, 0.83 mm. Total body length, 1.12 mm. Length of eye tubercle, 0.14 mm. Width of eye tubercle, 0.17 mm. Length of 2nd legs, 2.15 mm.

Anterior margin of scute with 1-2 tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle a blunt cone. Eyes present. Maxillary processes on 2nd coxa small.

Tarsal formula 3-4-4-4. Trochanteral spur absent. Dorsal surface of palpal tarsus with a spur that is not more than one-third the length of terminal claw.

Ventral plate of penis with shallow lateral notches.

Color yellow-orange.

FEMALE. Similar to male but without palpal spur.

TYPE LOCALITY. 6.2 miles north of Mercer Caverns, Sheep Ranch Road, Calaveras County, California, T. Briggs and K. Hom.

NEW RECORDS. CALIFORNIA. TUOLUMNE COUNTY: Under limestone outside of entrance to Crystal Palace Cave, near Columbia, 11 April 1967, T. Briggs. Under limestone outside entrance to McLean's Cave, near Columbia, 13 May 1967, T. Briggs.

***Sitalcina sierra breva* Briggs, new subspecies.**

(Figures 17, 47, and 77.)

MALE. Scute length, 0.70 mm. Scute width, 0.78 mm. Total body length, 0.98 mm. Length of eye tubercle, 0.14 mm. Width of eye tubercle, 0.14 mm. Length of 2nd leg, 1.97 mm.

Anterior margin of scute with 1-2 prominent tubercles. Posterior margin of tergites tuberculate. Eye tubercle rounded and slightly conical. Eyes present, retina reduced in size and darkness of pigment. Maxillary processes on 2nd coxa project as angular lobes.

Tarsal formula 3-4-4-4. Trochanteral spur absent. Dorsal surface of palpal tarsus with a very small spur.

Ventral plate of penis with reduced lateral projections and few superior setae. Color yellow.

FEMALE. Similar to male but without spur on palpal tarsus.

TYPES. Holotype male, allotype female, and four paratypes. Under basalt in grassland 1 mile south Knight's Ferry, Stanislaus County, California, 11 April 1967, T. Briggs.

***Sitalcina ensata* Briggs, new species**

(Figures 18, 48, and 78.)

MALE. Scute length, 0.81 mm. Scute width, 0.81 mm. Total body length, 1.12 mm. Length of eye tubercle, 0.16 mm. Width of eye tubercle, 0.17 mm. Length of 2nd leg, 2.08 mm.

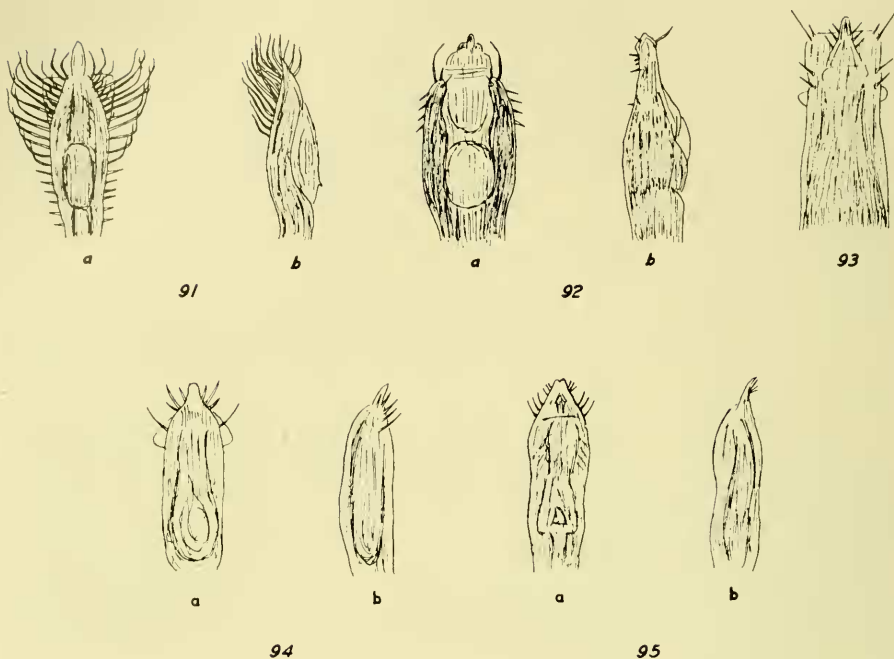
Anterior margin of scute with 2-3 prominent tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle rounded, slightly conical. Eyes present. Operculum with lateral groove under anterior margin. Maxillary processes on 2nd coxa much reduced.

Tarsal formula 3-4-4-4. Trochanteral spur absent. Dorsal spur on palpal tarsus absent or much reduced. Anterior prolateral spine on palpal tarsus twice as long as posterior prolateral spine.

Ventral plate of penis with tufts of lateral setae on bare pointed anterior. Slight lateral constriction posterior to setae.

Color orange.

FEMALE. Similar to male but anterior prolateral spine on palpal tarsus is same length as posterior prolateral spine.



FIGURES 91-95. Ventral view of penis of species of *Sitalcina*. Figure 91, *S. scopula*; figure 92, *S. bifurcata*; figure 93, *S. palapraeputia*; figure 94, *S. mariposa*; figure 95, *S. yosemitensis*.

TYPES. Holotype male, allotype female, and four paratypes. Under rocks in oak grove; 2.0 miles northwest Trimmer, Fresno County, California, 16 April 1967, T. Briggs; one paratype under granite, 4.0 miles east Academy, Fresno County, California, 16 April 1967, T. Briggs; four paratypes under schist, 7.0 miles south Trimmer, Fresno County, California, 16 April 1967, T. Briggs; three paratypes under granite, 3 miles south Toll House, Fresno County, California, 16 April 1967, W. Lum and T. Briggs.

***Sitalcina kaweahensis* Briggs and Hom.**

(Figures 19, 49, and 79.)

Sitalcina kaweahensis Briggs and Hom, 1966, Pan-Pac. Ent., vol. 42, pp. 266, 267.

MALE. Scute length, 1.06 mm. Scute width, 1.00 mm. Total body length, 1.50 mm. Length of eye tubercle, 0.20 mm. Width of eye tubercle, 0.17 mm. Length of 2nd leg, 2.29 mm.

Anterior margin of scute with 4 prominent tubercles on each side. Posterior margin of tergites bear groups of tubercles which give them a slightly lobate appearance. Eye tubercle rounded, slightly conical. Eyes present. Maxillary process on 2nd coxa small.

Tarsal formula 3-5-4-5. Trochanteral spur absent. Dorsal surface of palpal tarsus with a short, blunt spur.

Ventral plate of penis with 5-7 setae on each lateral margin. Distal margin bare, uniformly rounded. Dorsal plates protrude laterally.

Color yellow-orange.

FEMALE. Similar to male but without palpal spur. Ovipositor with normal structures.

TYPE LOCALITY. 0.3 miles north junction of Woodlake-Lemon Cove Road on road to Badger, Tulare Co., California.

NEW RECORDS. CALIFORNIA. TULARE COUNTY: Under granite in Coffee Creek Camp, 5 miles northwest Springfield, 18 December 1966, V. Lee; under granite on north face of Rocky Hill, near Exeter, 19 December 1966, T. Briggs; under granite on hill in Round Valley, 3 miles east Lindsay, 19 December 1966, K. Hom and T. Briggs; under granite, 1.0 miles east Three Rivers, 15 October 1967, T. Briggs.

***Sitalcina cloughensis* Briggs and Hom.**

(Figures 20, 50, and 80.)

Sitalcina cloughensis Briggs and Hom, 1967, Pan-Pac. Ent., vol. 43, p. 52.

MALE. Scute length, 0.85 mm. Scute width, 0.88 mm. Total body length, 1.17 mm. Length of eye tubercle, 0.15 mm. Width of eye tubercle, 0.17 mm. Length of 2nd pair of legs, 2.47 mm.

Anterior margin of scute with a prominent tubercle on each side. Posterior margin of tergites slightly tuberculate. Eye tubercle rounded and slightly conical. Eyes without cornea or retina.

Tarsal formula 3-5-5-5. Trochanteral spur absent. Dorsal surface of palpal tarsus without a spur.

Ventral plate of penis with a small, rounded lobe at apex. Aedeagus long, folded into an S-shaped loop.

Color pale yellow-orange.

FEMALE. Similar to male.

TYPE LOCALITY. Ladder Room of Clough Cave, South Fork Ranger Station, Sequoia National Park, Tulare County, California, T. Briggs, V. Lee, and K. Hom.

***Sitalcina macula* Briggs, new species.**

(Figures 21, 51, and 81.)

MALE. Scute length, 0.62 mm. Scute width, 0.61 mm. Total body length, 0.84 mm. Length of eye tubercle, 0.09 mm. Width of eye tubercle, 0.12 mm. Length of 2nd leg, 1.48 mm.

Anterior margin of scute with one long and one short tubercle on each side. Posterior margin of tergites tuberculate. Eye tubercle low, rounded, setose, and extends over anterior margin of scute. Eyes variable, with or without retina. Corneal lens always present. Operculum oval with indentation on anterior margin. Maxillary processes on 2nd coxa small, with slight ventral projection.

Tarsal formula 3-4-4-4. Trochanteral spur absent. Dorsal spur on palpal tarsus absent.

Ventral plate of penis with tufts of setae on anterior lateral margins, anterior margin with scoop-shaped extension. Narrow penis stalk.

Color yellow with black marbled background of inner pigmentation.

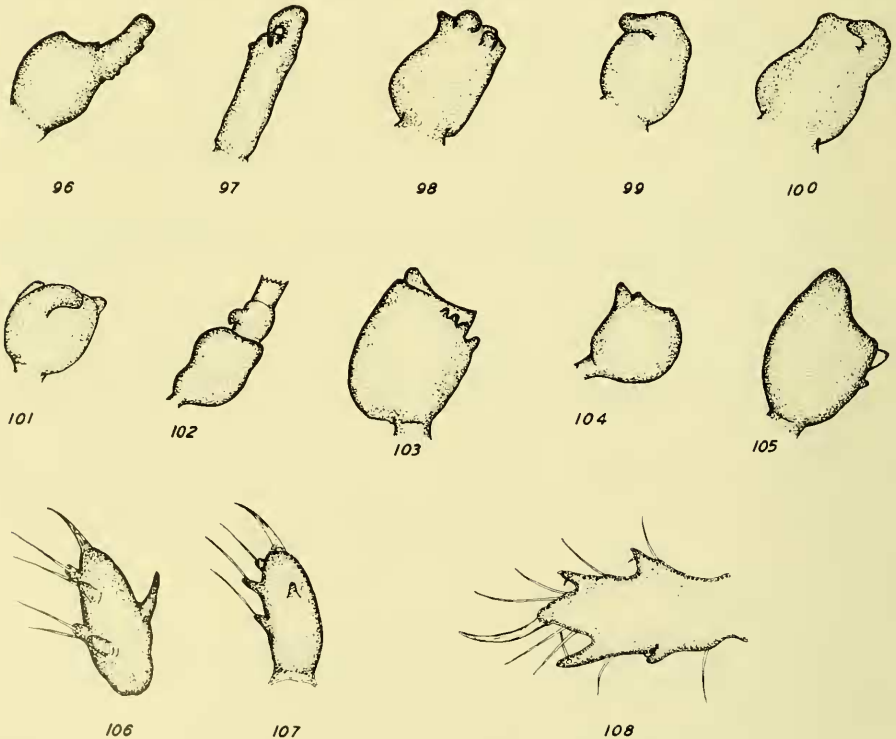
FEMALE. Similar to male.

TYPES. Holotype male, allotype female, and five paratypes. Under serpentine on steep, moist slope in oak-grassland, 9 miles southeast of Academy, Fresno County, California, 16 April 1967, T. Briggs.

***Sitalcina piedra* Briggs, new species.**

(Figures 22, 52, and 82.)

MALE. Scute length, 1.15 mm. Scute width, 1.25 mm. Total body length,



FIGURES 96-108. Secondary sexual characters on males in *Sitalcina*. Figures 96-105, trochantal spurs on the 4th legs of *S. californicus*, *S. lobatus*, *S. granita*, *S. flava flava*, *S. flava chalonga*, *S. sura*, *S. madera*, *S. cockerelli*, *S. scopula*, and *S. bifurcata* respectively; figures 106-107, dorsal spurs on palpal tarsi of *S. digitus* and *S. polina* respectively; figure 108, elongate anterior prolateral spine on right palpal tarsus of *S. ensata*.

1.67 mm. Length of eye tubercle, 0.25 mm. Width of eye tubercle, 0.17 mm. Length of 2nd leg, 3.70 mm.

Anterior margin of scute with 2-3 tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle rounded, extends over anterior margin of scute, with tubercles irregularly spaced over dorsum. Eyes present, Maxillary processes on 2nd coxa small.

Tarsal formula 3-4-4-5. Trochanteral spur absent. Dorsal spur on palpal tarsus absent or much reduced on anterior of dorsum.

Ventral plate of penis with lateral setae and short distal extension bearing setae.

Color reddish brown.

FEMALE. Similar to male. Ovipositor with normal structures.

TYPES. Holotype male, allotype female, and one paratype. Under rocks in oak-grassland, 1.6 miles southwest Piedra, Fresno County, California, 21 January 1967, T. Briggs, K. Hom, and A. Jung.

***Sitalcina keenea* Briggs, new species.**

(Figures 23, 53, and 83.)

MALE. Scute length, 0.86 mm. Scute width, 0.90 mm. Total body length, 1.22 mm. Length of eye tubercle, 0.17 mm. Width of eye tubercle, 0.19 mm. Length of 2nd leg, 2.08 mm.

Anterior margin of scute with 2-3 tubercles on each side. Posterior margin of tergites lobate. Eye tubercle a small pointed cone. Eyes present.

Tarsal formula 3-4-4-5. Trochanteral spur absent. Dorsal surface of palpal tarsus with spur about 20 percent length of terminal claw.

Ventral plate of penis with an extensive distal elongation bearing setae near tip. Color yellowish orange.

FEMALE. Similar to male but without palpal spur. Ovipositor of normal structure.

TYPES. Holotype male and allotype female. Under granite in moist oak-grassland, 3.2 miles northwest Keene, Kern County, California, 19 March 1967, V. Lee.

***Sitalcina topanga* Briggs, new species.**

(Figures 24, 54, and 84.)

MALE. Scute length, 0.91 mm. Scute width, 1.00 mm. Total body length, 1.28 mm. Length of eye tubercle, 0.18 mm. Width of eye tubercle, 0.18 mm. Length of 2nd leg, 2.70 mm.

Each side of anterior margin of scute with 2-3 tubercles, one of which is dominant. Posterior margin of tergites with small tubercles. Eye tubercle a low, blunt mound. Eyes small. Maxillary processes on 2nd coxa much reduced.

Tarsal formula 3-5-5-5. Trochanteral spur absent. Dorsal surface of palpal tarsus with a blunt spur.

Ventral plate of penis with a few superior setae along lateral margins and four prominent setae from slightly lengthened tip.

Color yellow-orange.

FEMALE. Similar to male but without palpal spur. Ovipositor with normal structure.

TYPES. Holotype male, allotype female, and four paratypes. Under sandstone in dense oak, 3.3 miles north Topanga Beach, in Topanga Canyon, Los Angeles County, California, 7 April 1966, T. Briggs, V. Lee, and K. Hom. Two paratypes, 1.0 miles south Topanga, Los Angeles County, California, 24 March 1967, T. Briggs and K. Hom.

***Sitalcina morroensis* Briggs, new species.**

(Figures 25, 55, and 85.)

MALE. Scute length, 0.82 mm. Scute width, 0.85 mm. Total body length, 1.05 mm. Length of eye tubercle, 0.12 mm. Width of eye tubercle, 0.15 mm. Length of 2nd leg, 2.11 mm.

Anterior margin of scute with one spur on each side. Posterior margin of tergites slightly tuberculate. Eye tubercle a low, rounded mound. Eyes with corneal lens without retina. Maxillary processes on 2nd coxa adjacent lobes.

Tarsal formula 3-4-4-4. Trochanteral spur absent. Dorsal surface of palpal tarsus with a short spur.

Ventral plate of penis with four prominent setae on distal apex.

Color yellow-orange.

FEMALE. Similar to male but without palpal spur. Ovipositor with elongate anterior setae.

TYPES. Holotype male and allotype female. Under serpentine in marshy grassland, 0.8 miles due north Morro Bay, San Luis Obispo County, California, 2 March 1967, T. Briggs. One paratype under serpentine, 0.4 miles east Morro Bay, San Luis Obispo County, California, 2 March 1967, V. Lee.

***Sitalcina, serpentina* Briggs and Hom.**

(Figures 26, 56, and 86.)

Sitalcina serpentina Briggs and Hom, 1966, Pan-Pac. Ent., vol. 42, pp. 268, 269.

MALE. Scute length 0.84 mm. Scute width, 1.02 mm. Total body length, 1.37 mm. Length of eye tubercle, 0.19 mm. Width of eye tubercle, 0.19 mm. Length of 2nd leg, 2.34 mm.

Anterior margin of scute with 2-3 tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle an irregularly tuberculate, rounded mound. Eyes with corneal lens but without retina. Maxillary processes on 2nd coxa large and in lateral contact. Operculum narrows to the anterior.

Tarsal formula 3-4-4-5. Trochanteral spur absent. Dorsal surface of palpal tarsus with very small spur; anterior retrolateral spine longer than posterior retrolateral spine.

Ventral plate of penis with few prominent superior setae and bare, truncate tip. Dorsal plates visible as lateral projections.

Color yellow-orange.

FEMALE. Similar to male but without palpal spur or lengthened anterior retrolateral spine.

TYPE LOCALITY. Slope off Silver Creek Road, 5 miles southeast of Tully Road, San Jose, Santa Clara County, California.

NEW RECORDS. CALIFORNIA. CONTRA COSTA COUNTY: Under serpentine in oak grassland in Russelman Park, near Clayton, 23 April 1967, T. Briggs. SAN MATEO COUNTY: Under rotting logs in redwood grove in San Mateo Memorial County Park, 2 July 1967, V. Lee and T. Briggs. SANTA CLARA COUNTY: Under serpentine in moist grassland on eastern side of Mt. Madonna County Park, 18 January 1967, T. Briggs.

***Sitalcina minor* Briggs and Hom.**

(Figures 27, 57, and 87.)

Sitalcina minor Briggs and Hom, 1966, Pan-Pac. Ent., vol. 42, pp. 263-265.

MALE. Scute length, 0.71 mm. Scute width, 0.77 mm. Total body length, 1.14 mm. Length of eye tubercle, 0.08 mm. Width of eye tubercle, 0.14 mm. Length of 2nd leg, 2.16 mm.

Anterior margin of scute with 0-1 tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle elliptical, broader than long; profile descends rapidly posteriorly. Eyes and corneal lenses absent. Maxillary processes on 2nd coxa.

Tarsal count 3-4-4-4. Trochanteral spur absent. Dorsal surface of palpal tarsus without a spur.

Ventral plate of penis with bare, elongate distal extension. Lateral margins with few superior setae.

Color yellow-orange.

FEMALE. Almost identical in appearance to male.

TYPE LOCALITY. Under serpentine at spring 0.75 miles north of Crystal Springs Dam along County Road no. 14, San Mateo County, California, 23 January 1966, K. Hom and T. Briggs.

***Sitalcina tiburona* Briggs and Hom.**

(Figures 28, 58, and 89.)

Sitalcina tiburona Briggs and Hom, 1966, Pan-Pac. Ent., vol. 42, pp. 265-266.

MALE. Scute length, 0.85 mm. Scute width, 0.82 mm. Total body length, 1.17 mm. Length of eye tubercle, 0.25 mm. Width of eye tubercle, 0.28 mm. Length of 2nd leg, 2.55 mm.

Anterior margin of scute without tubercles. Posterior margin of tergites almost smooth. Eye tubercle oval, bluntly pointed; profile descends gently pos-

teriorly. Eyes and corneal lenses absent. Maxillary processes on 2nd coxa ventrally directed retrolaterally. Operculum small.

Tarsal formula 3-4-4-4. Trochanteral spur absent. Dorsal surface of palpal tarsus without spur.

Ventral plate of penis with short lateral setal and a bare, uniformly rounded tip. Aedeagus large.

Color yellow-orange.

FEMALE. Similar to male. Ovipositor of normal structure.

TYPE LOCALITY. Under serpentine about 0.5 mile due northeast Bel Aire School, Tiburon, Marin County, California, T. Briggs and K. Hom.

Sitalcina sequoia Briggs and Hom.

(Figures 29, 59, and 90.)

Sitalcina sequoia Briggs and Hom, 1966, Pan-Pac. Ent., vol. 42, pp. 267-268.

MALE. Scute length, 0.71 mm. Scute width, 0.77 mm. Total body length, 1.04 mm. Length of eye tubercle, 0.13 mm. Width of eye tubercle, 0.17 mm. Length of 2nd leg, 1.78 mm.

Anterior margin of scute with one tubercle on each side. Posterior margin of tergites almost smooth. Eye tubercle smooth, rounded. Eyes present. Maxillary processes on 2nd coxa reduced. Operculum large, overlaps 4th coxa slightly.

Tarsal count 3-3-4-4. Trochanteral spur absent. Dorsal surface of palpal tarsus without spur.

Ventral plate of penis with about 5 superior setae; distal margin barely and slightly elongate. Penis stalk broad.

Color yellow-orange.

FEMALE. Similar to male but with slightly smaller operculum and slightly truncate eye tubercle. Ovipositor of normal structure.

TYPE LOCALITY. 2.3 miles south Piercy, Mendocino County, California, K. Hom and T. Briggs.

NEW RECORDS. CALIFORNIA. MENDOCINO COUNTY: Under Douglas Fir logs 1.5 miles southeast Little River, 3 July 1966, T. Briggs, V. Lee, A. Jung, K. Hom, and P. Lum.

Sitalcina scopula Briggs, new species.

(Figures 30, 60, 91, and 104.)

MALE. Scute length, 1.06 mm. Scute width, 1.09 mm. Total body length, 1.54 mm. Length of eye tubercle, 0.19 mm. Width of eye tubercle, 0.19 mm. Length of 2nd legs, 3.28 mm.

Anterior margin of scute without tubercles. Posterior margin of tergites almost smooth. Eye tubercle a flattened sphere. Eyes without cornea and retina. Operculum broad.

Tarsal formula 3-5-5-5. Trochanteral spur exists as a small, blunt tubercle on ventral side of 4th trochanter. Dorsal surface of palpal tarsus without spur.

Ventral plate of penis with broad, truncated plate over a distal lobe and bears a dense scopula of elongate setae. Penis stalk narrow.

Color orange.

FEMALE. Similar to male but without trochanteral spur. Operculum broader than that of males.

TYPES. Holotype male, allotype female, and three paratypes. Under granite in moist grassland pasture, 2.8 miles northwest Fountain Springs, Tulare County, California, 19 March 1967, T. Briggs, K. Hom, and A. Jung.

***Sitalcina bifurcata* Briggs, new species.**

(Figures 31, 61, 92, and 105.)

MALE. Scute length, 1.20 mm. Scute width, 1.28 mm. Total body length, 1.69 mm. Length of eye tubercle, 0.25 mm. Width of eye tubercle, 0.31 mm. Length of 2nd legs, 3.30 mm.

Anterior margin of scute with 5 or more large tubercles on each side. Posterior margin of tergites not bordered by tubercles. Cephalothorax tuberculate. Eye tubercle large, rounded, slightly tuberculate. Eyes large. Tubercles on dorsum of 2nd and 4th coxa. Operculum pentagonal with linear posterior.

Tarsal formula 3-5-4-5. Trochanteral spur exists as 2 small lobes from center of 4th trochanter. Dorsal surface of palpal tarsus without spur.

Ventral plate of penis bifurcate with membrane joining posterior of distal divisions. Divisions bear spines laterally and distally.

Color orange.

FEMALE. Similar to male, including trochanteral lobes, but operculum rounded instead of pentagonal. Ovipositor of normal structure but with elongate spines.

TYPES. Holotype male, allotype female, and ten paratypes. Under rocks in yellow pine near west entrance Castle Cragg State Park, Shasta County, California, 6 May 1967, K. Hom, T. Briggs, and A. Jung; 13 paratypes under limestone, 5 miles southwest Round Mountain, Shasta County, California, 7 May 1967, T. Briggs and A. Jung; three paratypes under rocks, Clear Creek Camp, Shasta National Forest, Shasta County, California, 5 August 1967, T. Briggs.

***Sitalcina palapraeputia* Briggs, new species.**

(Figures 32, 62, and 93.)

MALE. Scute length, 1.10 mm. Scute width, 1.12 mm. Total body length, 1.60 mm. Length of eye tubercle, 0.23 mm. Width of eye tubercle, 0.25 mm. Length of 2nd legs, 2.66 mm.

Anterior margin of scute with 2 tubercles on each side. Posterior margin of tergites slightly tuberculate. Eye tubercle rounded, nearly smooth. Eyes present. Maxillary processes on 2nd coxa small. Operculum broad, concave on anterior margin.

Tarsal count 3-4-4-5. Trochanteral spur absent. Dorsal surface of palpal tarsus without a spur.

Ventral plate of penis with a stiff, broad, truncated plate over a prominent distal projection. Projection and plate with setae. Dorsal plates project laterally over ventral plate.

Color reddish brown.

FEMALE. Similar to male. Ovipositor very short.

TYPES. Holotype male, allotype female, and two paratypes. Under serpentine in open grassland, 7 miles northeast Piedra, Fresno County, California, 21 January 1967, K. Hom and T. Briggs. One paratype under granite, 4.6 miles northeast Piedra, Fresno County, California, 21 January 1967, K. Hom.

***Sitalcina borregoensis* Briggs, new species.**

(Figures 33 and 64.)

FEMALE. Scute length, 0.86 mm. Scute width, 0.87 mm. Total body length, 1.36 mm. Length of eye tubercle, 0.19 mm. Width of eye tubercle, 0.19 mm. Length of 2nd leg, 2.66 mm.

Anterior margin of scute with 3 tubercles, separated from each other by the width of a tubercle, on each side of margin. Posterior margin of tergites with tubercles. Eye tubercle lower than highest portion of scute, in the form of a flattened sphere with anterior tubercles. Eyes large. Maxillary processes on 2nd coxa blunt. Operculum uniformly rounded anteriorly.

Tarsal count 3-5-5-5. Trochanteral spur or spur on palpal tarsus absent. Ovipositor of normal structure.

Color yellow-orange.

MALE. Unknown.

TYPES. Holotype female and two paratypes. Under granite in palm grove, Mt. Palm Springs, Anza-Borrego Desert State Park, San Diego County, California, 5 April 1967, T. Briggs.

***Sitalcina polina* Briggs, new species.**

(Figures 34, 65, 88, and 107.)

MALE. Scute length, 0.78 mm. Scute width, 0.76 mm. Total body length, 1.09 mm. Length of eye tubercle, 0.16 mm. Width of eye tubercle, 0.17 mm. Length of 2nd legs, 2.07 mm.

Anterior margin of scute with about 2 tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle spherical and smooth. Eyes without retina and with or without corneal lense. Maxillary processes on 2nd coxa slightly project downward. Operculum somewhat broadened.

Tarsal count 3-4-4-4. Trochanteral spur absent. Dorsal surface of palpal tarsus with a very small spur.

Ventral plate of penis without a significant distal projection and with four superior setae near anterior margin.

Color yellow-orange.

FEMALE. Similar to male but without palpal spur.

TYPES. Holotype male, allotype female, and three paratypes. Under serpentine in moist grass at El Polin Spring, Presidio of San Francisco, San Francisco County, California, 11 December 1966, T. Briggs; 15 paratypes under serpentine in grassland on top of hill, 2.5 miles due east Shellville, Sonoma County, California, 2 April 1967, T. Briggs; 8 paratypes under serpentine in grassland, 1 mile northwest Novato, Marin County, California, 2 April 1967, T. Briggs.

***Sitalcina mariposa* Briggs, new species.**

(Figures 35, 63, and 94.)

MALE. Scute length, 0.98 mm. Scute width, 1.00 mm. Total body length, 1.47 mm. Length of eye tubercle, 0.22 mm. Width of eye tubercle, 0.22 mm. Length of 2nd leg, 2.60 mm.

Anterior margin of scute with 4 tubercles on each side. Posterior margin of tergites tuberculate. Eye tubercle a rounded cone. Eyes present. Maxillary processes on 2nd coxa slightly project ventrally. Operculum with broad anterior margin.

Tarsal formula 3-5-5-5. Trochanteral spur absent. Dorsal surface of palpal tarsus with spur about one-third the length of terminal claw.

Ventral plate of penis with an elongate distal extension. Lateral margins with superior setae. Penis stalk broad.

Color orange.

FEMALE. Similar to male but without palpal spur.

TYPES. Holotype male, allotype female, and three paratypes. Under logs in Sequoia Grove, Mariposa Grove, Yosemite National Park, Mariposa County, California, 28 July 1967, T. Briggs and K. Hom; two paratypes under logs in yellow pine, 20 miles south Yosemite Valley, Mariposa County, California, 28 July 1967, T. Briggs.

***Sitalcina yosemitensis* Briggs, new species.**

(Figures 36, 66, and 95.)

MALE. Scute length, 0.92 mm. Scute width, 0.89 mm. Total body length, 1.37 mm. Length of eye tubercle, 0.19 mm. Width of eye tubercle, 0.16 mm. Length of 2nd leg, 2.17 mm.

Anterior margin of scute with 3 tubercles on each side. Posterior margin of tergites with small tubercles. Eye tubercle a rounded cone which extends over anterior margin of scute. Eyes large.

Tarsal count 3-4-4-5. Trochanteral spur absent. Dorsal surface of palpal tarsus with a blunt spur.

Ventral plate of penis with a bare, bilobed distal margin. Lateral margins with superior setae.

Color orange.

FEMALE. Similar to male but without palpal spur. Operculum more convex on anterior margin than that of males.

TYPES. Holotype male, allotype female, and three paratypes. Under bark on ground, 5.0 miles west Crane Flat Ranger Station, Yosemite National Park, Tuolumne County, California, 28 July 1967, T. Briggs and A. Lee.

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